

State of Alaska  
Department of Natural Resources  
Division of Forestry  
Coastal Region  
Kenai / Kodiak Area

**Forest Land Use Plan /Preliminary Decision  
North Fork Timber Sale SC-3187K  
Spring 2010**



I. INTRODUCTION .....	3
A. Purpose.....	3
B. Objectives .....	3
C. Alaska Coastal Management Program (ACMP) Consistency.....	3
E. Location .....	4
F. Title, Classification and Other Active or Pending Interests .....	4
II. LEGAL AUTHORITY .....	5
III. ADMINISTRATIVE RECORD.....	6
A. Physical characteristics .....	6
Topography.....	6
Soils .....	6
Water bodies .....	6
Fire and Fuels Mitigation .....	8
B. Wildlife .....	9
Bears .....	9
Moose .....	11
Other Fur Bearers.....	11
Fisheries.....	12
C. Human Activity and Social Considerations .....	12
Hunting.....	12
Subsistence.....	13
Recreation .....	13
Scenic resources .....	13
Cultural resources.....	13
D. Silviculture and Timber Harvest .....	14
Sustained yield and allowable cut .....	15
F. Transportation.....	15
G. Erosion .....	15
Mining .....	15
Materials .....	15
Economics.....	16
V. MARKET CONDITIONS .....	16
VI.ALTERNATIVE ACTIONS .....	16
VII.ACMP CONSISTENCY ANALYSIS .....	17
Abbreviations.....	18
References Cited .....	19
Links to Planning Documents: .....	21
Timber sale Maps .....	22

## **I. INTRODUCTION**

### **A. Purpose**

The purpose of this document is to provide sufficient information to reviewers to ensure that the best interest of the state will be served by the Department of Natural Resources, Division of Forestry, Kenai-Kodiak Area offering for sale an estimated 455 MBF or 900 cords, of spruce by competitive sealed bids. The sale is designed to minimize impacts on visual quality, recreation, tourism, water quality, wildlife resources, and fisheries.

The North Fork Timber Sale is located approximately four miles east of Anchor Point. This sale consists of one 65-acre harvest unit is bordered on the west and the east side by low lying wet sites occupied by scattered black spruce. To the north, is forested land selected by the Kenai Peninsula Borough; to the south is land designated for wildlife habitat under the Kenai Area Plan. The silvicultural system for timber harvest in this sale will be a sanitation-salvage, which entails removing dead and infested trees. The operator will remove dead and infested trees while retaining healthy spruce for seed reserves. All dead or infested spruce larger than 8 inches in DBH will be removed. Live spruce over 10 inches DBH will be harvested. Birch trees that are dead, dying, or appear defective will be harvested. At its discretion, the State may mark in the field, or otherwise designate spruce or birch trees to be retained from harvest. This will help ensure that seed trees have desirable physical characteristics. The resulting stand will contain approximately 100 stems per acre of spruce and birch. The Division of Forestry may augment reforestation by planting seedlings within two years of harvest. Scarification will be required of the operator before completion of the timber sale; scarification will provide better conditions for establishing seedlings, both natural and planted.

The public is invited to comment on any aspect of this proposed timber sale with regards to the AS 38.05.035 decision. Comments should be mailed to Division of Forestry, 42499 Sterling Highway, Soldotna, Alaska 99669. Comments must be received at the Division of Forestry no later than **July 7, 2010** in order to be considered in the final decision of whether the sale will be held in whole or in part. To be eligible to appeal the final decision a person must have provided written comment by **July 7, 2010**.

### **B. Objectives**

1. The primary objectives of this timber sale are to reduce the wildfire risk and potential destruction of adjacent private property by salvaging timber affected by bark beetles.
2. To accelerate reforestation: harvesting timber is a means of preparing the area for new trees to establish. This proposal helps meet the Division's statutory responsibility to provide "...sound forest practices necessary to ensure the continuous growing and harvesting of commercial forest species on ...state land."
3. To follow DNR's constitutional mandate to encourage the development of the state's renewable resources, making these resources available for maximum use consistent with the public interest. Firewood is the primary product of this sale, and therefore parallels the publics' increasing firewood demand.

### **C. Alaska Coastal Management Program (ACMP) Consistency**

One purpose of this document is to provide sufficient information to ACMP reviewers and other reviewers to evaluate whether this project is consistent with the ACMP. DNR believes the activity described in this FLUP is consistent with the ACMP. See Section VII for DNR's consistency analysis.

Pursuant to AS 46.40.096(d)(1), the Division of Forestry is requesting consistency review comments from state resource agencies, affected coastal districts, and other interested parties. Your comments, particularly on the proposed timber sale's consistency with the affected local coastal district management program, are requested. To be considered, written comments must be submitted to the Area Forester, Alaska Division of Forestry, 42499 Sterling Highway, Soldotna, AK, 99669 on or before **July 7, 2010**. Comments regarding the inconsistency with the affected coastal district's enforceable policies or a state standard set in 11 AAC 112 and 11 AAC 114 must identify the enforceable policy or standard and explain how the timber sale is inconsistent. The Director will make a final ACMP Consistency Determination for the sale prior to his final decision regarding the sale.

#### **D. Five-Year Sale Schedule**

The general location of this proposed timber sale was shown in the Five-Year Schedule of Timber Sales for calendar years 2007 – 2011, and is also included in the FYSTS calendar years 2009 – 2013, as required by AS 38.05.113 (Five Year Sale Schedule).

#### **E. Location**

The legal description of this proposed action is as follows: Section 1, Township 5 South, Range 15 West, and Section 31 Township 4 South, Range 14 West, Seward Meridian. This sale is within the Kenai Peninsula Borough District Coastal Management Plan. The nearest Regional Native Corporation is The Cook Inlet Region, Inc., (CIRI); land owned by CIRI is adjacent to the west and to the east of the DNR parcel containing this proposed sale. The nearest village corporation is the Ninilchik Native Association. Anchor Point is the nearest community, and is located approximately 4 miles west of the sale area; the community of Ninilchik is approximately 18 miles northwest of the sale area. This sale can be located on the United States Geological Survey 1:63,360 Quadrangle map titled Seldovia D-5.

#### **F. Title, Classification and Other Active or Pending Interests**

The sale area was acquired by the State of Alaska as General Grant lands under the Statehood Entitlement Act of July 7, 1958. The state received patent to these lands on or before March 6, 1961. The Patent Number is 1217604. The sale is located in an area covered by the Kenai Area Plan (KAP )- adopted January 2000 and has the following unit numbers and designations:

KAP Unit #333A	General Use “gu”
KAP Unit #333C	Settlements “se”

Timber harvest is an allowed use lands designated under the KAP for General Use. The removal of dead trees—a primary objective of this sale—will reduce wildfire intensity potential and reduce the amount of site preparation needed for lands designated for Settlements. The Division of Forestry maintains that the timber sale results would be congruous with the intent of the KAP Settlements Designation. The Division of Mining, Land and Water concurred and had no site-specific objections to this proposed sale (DML&W, 2010)

To the north, is forested land selected by the Kenai Peninsula Borough. The Kenai Peninsula Borough has stated that they have no objection to timber harvest within the selected parcels which comprise approximately the north half of the proposed sale, (KPB, 2010).

#### **Planning Framework**

The decision to offer the North Fork Timber Sale was based on a long series of planning decisions, made with public and agency input every step of the way. This document, the Forest Land Use Plan (FLUP) for the

timber sale, is one of the final steps in this long planning process. The planning for where timber harvest is appropriate, and where it is not appropriate, is done at a much broader scale than the FLUP. The framework for how management decisions are made for timber sales on the Kenai Peninsula is as follows:

1. Area plans, management plans, and land use plans (in this case, the *Kenai Area Plan*) determine where timber harvesting is allowed.
2. The Forest Resources and Practices Act and Regulations, and the Alaska Forest Management Statutes & Regulations determine how timber will be managed within areas where harvesting is allowed by the area plan.
3. The Five-Year Schedule of Timber Sales proposes when timber sales will be offered, and approximately where and how big each sale will be.
4. Next, a Forest Land Use Plan is written for each individual sale, which contains more detailed decisions about each sale.

Both the area plan and the management plan processes are the means to openly review resource information and public concerns prior to making long-range decisions about public land management. The planning processes determined how the complete range of uses would be accommodated in the proposed sale area, including opportunities for forestry, as well as protecting fish and wildlife habitat, opportunities for recreation, and the whole range of other uses. The decision to allow timber harvest in the area is based on the fact that the Kenai Area Plan's designation for this particular area allows for timber harvest.

Next, the Division of Forestry prepares a Five-Year Schedule of Timber Sales (FYSTS) every other year. The FYSTS gives the public, timber industry, and other agencies an overview of the division's plans for timber sales. They summarize information on proposed timber harvest areas, timber sale access, and reforestation plans. Five-Year Schedules are subject to public and agency review. The review helps identify issues that must be addressed in detailed timber sale planning. After review and revision, DNR uses the schedules to decide how and where to proceed with timber sale planning.

The North Fork Timber Sale was included in the DOF's Mat-Su Area and Kenai-Kodiak Area Five Year Schedule of Timber Sales, 2009-2013. The notice was posted in all Kenai/Kodiak post offices and on the State of Alaska Public Notice and the DOF web sites. The notice was also sent to agencies, Kenai/Kodiak community councils, tribal councils, Native corporations, planning commissions, Legislative offices, conservation groups, small mill operators, timber industry representatives, and private citizens. These public comments were used to identify issues that would be addressed in the Forest Land Use Plans.

Finally, the Forest Land Use Plan (FLUP) is prepared. The FLUP presents detailed information on the location, access, harvest methods, duration, and proposed reforestation for each sale. The public is asked to comment at this stage, as well. By getting the best available data, combined with a series of public processes that helps us gather information from the public and other agencies, we make well-informed decisions about uses of resources on state land.

## **II. LEGAL AUTHORITY**

The Division is taking this action under the authority of AS 38.05.035(e) (Best Interest Finding); AS 38.05.110-120; 11 AAC 71 (Timber Sale Statutes and Regulations); AS 41.17.010-.950 and 11 AAC 95 (Forest Resources and Practices Statutes and Regulations); and AS 46.39 and 46.40 and 11 AAC 110, 112, and 114 (Alaska Coastal Management Statutes and Regulations).

### **III. ADMINISTRATIVE RECORD**

The DOF files its timber sale documents by timber sale name and number. The North Fork Timber Sale file is labeled SC-3187K. All records for the sale will be maintained at the DOF Kenai/ Kodiak Area Office.

### **IV. Description of Timber Sale Area**

#### **A. Physical characteristics**

##### **Topography**

This proposed sale is situated within a geographical area that is characterized by flat to gently rolling glacial outwash terrain. It is approximately 100 to 150 feet above sea level and local relief averages no more than 5 percent in slope.

##### **Soils**

According to the National Resource Conservation Service (NRCS) Web Soil Survey site, there are three primary soils within the sale area: Qutal silt loam, Redoubt silt loam, Starichikof and Doroshin silt loam. The basic profile of all three of these soils consists of an organic peat layer over silt loam; gravel originating from glacial drift is the underlying base. Qutal silt loam is within approximately 70 percent of the sale area; it is composed of ash over glacial drift as the parent materials. Compared to other nearby soils, it is poorly drained, and is often over a high water table (NRCS Web Soil Survey, 2009). However, water infiltration through this soil is sufficient to support spruce and hardwood species. Redoubt soils are relatively better drained than the other two soils mentioned above, and cover approximately 20 percent of the sale area. The Starichikof and Doroshin soils underlie the muskeg areas that surround the harvest unit. They are characteristically poorly drained and support boggy ecotypes.

##### **Water bodies**

There is one small stream located northeast of the sale area. This stream was examined during field reconnaissance and found to flow from the sale area and apparently enters the subsurface approximately 500 feet from the sale area in a large expanse of muskeg. Although this stream is not classified as fish habitat under the Alaska Forest Resources and Practices Act, protection of this stream from water quality degradation will be required.

An unnamed tributary of the Anchor River lies south of the sale area, (See Section B Wildlife, Fisheries, page 14). This unnamed tributary is identified by the Department of Fish & Game as 244-10-100-10-2021. The nearest point of the proposed harvest unit to this stream is 225 feet. There will not be any need to cross this stream for timber harvest activities. The sale area presents no obstacles that would prevent implementation of the best management practices of the FRPA for maintaining the water quality during proposed operations. This sale is located on the western edge of the Kenai Peninsula lowlands. Almost half of the sale area is surrounded by muskeg. The dry areas of the sale area are dominated by mature white/Lutz spruce, often mixed with paper birch.

##### **Stand Conditions**

The stand composition within the sale area is approximately 85 percent Lutz Spruce (*Picea X lutzii* Little) and the remaining species mix consisting of Paper Birch (*Betula papyrifera*) and Balsam Poplar (*Populus balsamifera*). On the Kenai Peninsula, there are natural hybrids between white spruce and Sitka spruce (*Picea glauca X sitchensis*). This hybrid is called Lutz spruce (*Picea X lutzii* Little). Researchers believe that this hybridization (a hybrid swarm) occurs at varying degrees with some trees showing strong white spruce characteristics, while others will show strong Sitka spruce characteristics. Due to the extensive beetle

mortality, stem breakage is occurring, resulting in opening up the stands. The site index for spruce in the sale area is 60 feet within 100 years, (NRCS Web Soil Survey—Alaska 2009.) Basal area of spruce, prior to the infestation, averaged 150 square feet per acre. Average age of the overstory spruce is 160+ years. Mature spruce trees (now dead), that were 8 inches diameter in breast height (DBH) and larger, ranged from 170 to 250 trees per acre. The average stand DBH is 12 inches, with an average height of 60 to 65 feet. Birch trees are few and widely scattered. The birch are old and in poor vigor. They are disappearing out of the stand. Advanced regeneration in the form of spruce seedlings is approximately 150 per acre. Birch regeneration has been heavily browsed by moose.

There have been considerable changes to the living forest stand structure on the Kenai due to the beetle infestation including: reduction in average age of surviving trees, lower average DBH, lower average tree height, and decline in stand density. At least eighty percent all spruce 9 inches DBH and greater are dead from spruce beetles. Although the area came under attack by beetles in the mid 90's, many larger spruce trees have lost significant amounts of bark. Wood decay is advancing as evident by increasing wind-snap, soft borings and prevalence of *Fomitopsis pinicola*. Approximately 15% of the spruce in the 9-inch and larger DBH classes are green. Residuals initially consist of suppressed and intermediate spruce resulting in decreased canopy cover (Schmid and Frye 1977). Also, stand species composition may be altered.

There are a number of successional pathways that may occur. Natural spruce regeneration occurs when there is an adequate supply of viable seed and an appropriate seedbed (INFEST #9). An influx of grass often occurs in unmanaged stands; this results in a lack of appropriate seedbed for tree regeneration. Due to the degree of spruce mortality, the amount of viable local seed is questionable.

Light levels of bluejoint reedgrass (*Calamagrostis canadensis*) are present throughout the area and increasing in locations receiving additional sunlight from the loss of canopy cover. Grass competition with regeneration is expected to be high. Bluejoint reedgrass quickly establishes itself in stands killed by spruce beetle. Because this grass lowers the soil temperature and is such an aggressive competitor, it inhibits the regeneration of both tree seedlings and browse species (Liefers, et al 1993). One study indicates that even after 11 years, no natural tree or browse regeneration had occurred (Holsten, et al 1995). Species diversity is declining in the forested stands and bluejoint reedgrass is becoming more dominant. Within two to four years following mortality, beetle killed trees begin to wind-snap and fall to the ground. The time-span between mortality and having the tree break-off and fall to the ground appears to be a function of the level of decay in the base of the tree at the time of mortality. Recent research has shown that 50 percent of the beetle killed trees break off and fall to the ground within 10 years (Holsten, et al 1995). These downed trees fall across each other or jackstraw and limit access and mobility of both human and wildlife use of the area (Thomas 1979).

In addition to *Calamagrostis*, other understory species in the area include rusty menziesia, twisted stalk, equisetum, Beauverd spirea, Labrador tea, prickly rose, crowberry, oak fern, feather mosses and club moss.

Wood decay fungi decompose roots, branches, and tree boles of dead trees and therefore play an important role in recycling wood in forests. However, sap rot decay also commonly and rapidly develops in spruce trees attacked by spruce beetles. Substantial amounts of potentially recoverable timber are lost annually due to heart and sap rot on the Kenai Peninsula. It is evident throughout the proposed sale area. Several species of sap rot fungi are associated with spruce beetle-caused mortality with *Fomitopsis pinicola* being the most common (USDA 1997). *Inonotus tomentosus*, a root disease, may also be present in the stand.

## **Fire and Fuels Mitigation**

Of the three main factors affecting fire behavior (fuel, weather, and topography), fuel is the only component over which some measure of management may be exerted. Extensive fuel management is the only option for mitigating potential losses (Beaver 1997).

The spruce beetle infestation during the 1990's resulted in the most significant ecological impact of any natural agent of change in Alaska (USDA 1996). Spruce beetles are greatly influenced the composition of forests by killing most spruce trees over 6 inches in diameter. In forest stands composed almost entirely of spruce, the effects to the forest structure caused by the bark beetle epidemic were dramatic. The almost total loss of mature seed bearing trees over large landscapes will have very long term and profound affects on spruce production on the Kenai Peninsula.

Over time, decaying spruce fall over, forming concentrated piles of jack-strawed trees. This provides a means for surface fires to accelerate the transition to crown fires in the remaining canopy. The heavy concentration of fuel will be available for combustion for many years.

The spread of fire is greatly enhanced in beetle-killed spruce. The amount of dead and dry fine material, such as Old Mans Beard lichen, that is contained in standing dead trees aids spot fire occurrence. Dead material down wind of a fire creates a condition where hot embers initiate new fire starts with much greater frequency when compared to green live forests (personal observation W. Wahrenbrock, DOF).

Another factor affecting the fire risk of forests is the probability of ignition. Probability of ignition is an expression of how easily a fire will ignite. Dead spruce with low moisture content will ignite far more readily than green spruce. Lightning has historically been an infrequent cause of fire ignition on the Kenai Peninsula (See 1998). However, wildland fire research scientists have stated that the potential for lightning fire ignitions is higher in expanses of snags versus live trees (Alexander and Stocks 1997).

Increased fuel loading on the ground surface will extend the fire problem in fuel types that are known to be of short season duration. Specifically, grass that evolves with increased exposure to sunlight usually only creates fire control problems during the early summer season before "green-up". The addition of large woody material from downed beetle killed trees will create fuel conditions that will support fire occurrence throughout the summer season. These fuel types have been observed to burn with high intensity. Fires in this fuel type burn 20 times faster and 6 times more intensely than the fuel type associated with healthy white spruce stands, particularly in the spring and early fall (See, 1997). Fires in downed spruce trees in grass fuels exhibit a high resistance to control by firefighters. This downed timber impedes access into a fire area by firefighters and will severely limit the use of tactical ground forces such as engines, dozers and hand crews. When suppressing fires during moderate environmental conditions, placing crews in this type of fuel poses a significant personal safety risk should winds begin to rapidly increase, change direction, or if sudden slope changes are encountered (J. Winters, personal observations, 1999 – 2007).

The advent of large landscapes of dead trees has also created a condition where fires will burn at high intensity but may not produce seedbeds that are receptive to forest regeneration. Several early season fires such as the Pot Hole Lake, Hidden Creek, and Crooked Creek fires, which resulted in suppression costs of \$6.6 million dollars, demonstrate this problem. Even though the dead spruce canopy of these fires burned with high intensity, surface vegetation consumption was low due to the high moisture content—typical of the early summer. Surveys of the Crooked Creek Fire revealed that the fire consumed only 2 to 3 centimeters (cm) of



duff material and less than 2% of the surface area had exposed mineral soils (Berg 1996). The fire destroyed birch and live spruce, thus minimizing seed sources for both species.

## **B. Wildlife**

The effects of the harvest activity will vary depending on species. Wildlife species that prefer mature and over-mature spruce stands will either be displaced or decline in numbers. Species preferring the grass-forb successional stage will likely increase in abundance (DF&G 1994).

### **Bears**

For black bear, the proposed timber sale includes areas with potential late summer and early fall berry crops. It is doubtful that winter denning sites exist on the block due to its proximity to residential development. No denning sites were identified during field reviews.

Increased vulnerability of local black bear populations to hunting is a function of road location and road density which, in turn, is related to the timber harvesting systems used and the level of logging activity (DF&G 1994). The silvicultural prescription, as mentioned above, retains a fringe approximately 100 feet wide of undisturbed forest for the purpose of providing wildlife cover. Approximately 3,500 feet of access road from the end of Lichen Avenue into the harvest unit will remain open for local residents to collect unmerchantable logs left at landings for firewood. Afterwards, the access road into the harvest unit will be blocked in a manner that reasonably prevents the access by highway vehicles.

The brown bear population on the Kenai is presently estimated to range between 250-300 bears (Schwartz, et al. 1999). To date, there has been no census for brown bears taken on the Kenai. There appears to be a healthy viable population (Selinger personal communication, 2008). The highest densities of brown bears are in the forested lowlands and sub-alpine areas west of the Kenai Mountains. No denning sites were identified within the proposed timber sale during field reconnaissance. Additionally, the proposed sale does not occur within the elevation range commonly chosen for den sites by brown bears (Jacobs 1989). Again, due to the proximity of the timber sale to human development, the area is not expected to be utilized frequently by brown bears. In consideration for maintaining wildlife cover, patches of less than five acres of timber will be left standing within the sale area to provide cover. Alternatively, all-or portions of the harvest unit will be surrounded by timber designated for retention as wildlife cover.

The spruce beetle infestation may reduce the value of the timber block over time for brown bear as hiding cover decreases and vegetation composition of the understory changes. Because of the relatively large home range and mobility of bears, the future degradation of the infested stands will probably not have significant impacts on the bear populations (USFS 1990 and DF&G 1994). Increased access associated with resource development is of concern to wildlife managers (Selinger, 2005). Roads associated with the timber harvest may cause behavioral changes with the bear population. Although evidence suggests that road avoidance behavior and habitat loss leads to changes in wildlife productivity and survivorship, there is little data currently available to support this hypothesis (Frederick 1991). To be of major concern to wildlife managers, behavioral responses to disturbance must have demonstrable demographic consequences. Demographic responses do not necessarily follow, even from significant behavioral responses to changes of the habitat (McLellan and Shackleton 1988). Significantly, the demographic response by brown bears on the Kenai Peninsula has been an increase in the population. Since the 1950's the brown bear population on the peninsula has increased to a current estimated population of 300 (Schwartz, DF&G 1997, personal communication). This is despite a human population increase on the Kenai Peninsula from 9,053 in 1960 to 53,409 in 2008 (US Census Bureau, 2009).

Several researchers suggest that grizzly bears habituate to open roads by shifting to a more nocturnal activity pattern. Apparently, darkness may serve as cover, allowing bears to use roads and adjacent habitats and cross open areas where they are vulnerable to human harassment and hunting mortality. To use areas within 100 meters (approximately 328 feet) of roads within their home range, bears have often done so under the cover of darkness by being nocturnal in their travel and feeding patterns (Frederick 1991). This travel period may be shorter in Alaska due to the state's latitude. However, numerous studies, including at least one in Alaska (Olson, et al 1998) have shown that brown bears will use highly disturbed areas by being nocturnal, while bears in undisturbed areas tend to be more crepuscular (active during twilight)(Frederick 1991). It has also been noted that sows with cubs and yearling juveniles more frequently used habitats near roads than other bears. These areas may have been relatively secure because potentially aggressive adult males avoided them (McLellan and Shackleton 1988). Several researchers reported that adult bears in open sites usually retreated to cover when a vehicle approached within 300 meters (984 feet). However, researchers McLellan and Shackleton found that bears fled even further when approached by people on foot; in 5 of 9 cases when bears in remote areas were approached by humans, bears fled for distances greater than 1 km (0.6 miles), or out of the immediate drainage (Frederick 1991). This illustrates that bears find vehicular traffic less threatening than people on foot. This may be attributable to habituation.

Since 1986, approximately a third of bears killed in defense of life or property (DLP) occur near homes, another third is associated with hunting, and the last third is from various activities such as fishing, hiking, ranching, etc. None of the DLP's were directly associated with timber harvest operations (Ted Spraker, DF&G, personal communications 1998 & Gino Del Frate, DF&G, personal communication 1997).

Kenai Peninsula bears killed in defense of life and property are more likely to occur close to roads and trails (IBBST, 2001). Motorized access will be developed under this proposal, but roads will be kept to the minimum necessary for this management activity and then closed. Harvest operations are not expected to exceed two years, so disturbance from harvest operations will be relatively brief. Temporary roads will be water-barred, cut and fill slopes stabilized, culverts removed, and woody debris spread over a portion of the roadbed and left for reestablishment of vegetation. Grass and alder will reseed rapidly on disturbed sites and help in effectively closing the road access. These actions are intended to closely align with the recommendations of the Kenai Peninsula Brown Bear Conservation Strategy (DF&G 2000).

The primary impact of harvesting may be on the home range of resident bears. However, research suggests that home ranges for brown bears can cover tens to hundreds of square miles and because of this variability; the concept of home range size is not very useful (DF&G 2000). Use of salmon spawning streams are clearly important for brown bears during the summer and fall, however, only the North Fork of the Anchor River to the south of the timber sale has spawning salmon.

The availability of security cover is considered important in how brown bears are influenced by human activities. Brown bears are at least twice as likely to be displaced from open areas where they can see or be seen by humans (Suring 1998). The portion of the sale area adjacent to muskegs will have a 100-foot-wide no-harvest buffer for this purpose. However, the harvested portion of the timber block will provide little cover for bears until the regeneration reaches an adequate height.

## **Moose**

Within the boreal forest, moose are generally more closely associated with forest cover in summer than in winter. This may reflect a preference for forage that is higher quality as a result of delayed plant development or different plant characteristics. Cows may prefer to calve and bed their newborns on forested knolls or other vegetated high points from which predators are more easily detected. These features may also present varied escape routes that require minimal energy expenditure by calves (Collins 1995).

As the dead spruce fall to the ground, escape routes will diminish and it is likely that energy expenditure by newborn moose for escape will be increased. The increase over time in the amount of deadfall that will occur without intervention will also decrease sight distance that may result in additional predation of young moose. The increasing amount of deadfall and debris on the forest floor could limit access to preferred foraging areas and limit mobility during critical times of the year for moose (DF&G 1994). DF&G (2003) notes that increasing deadfall over time will make moose travel through these areas more difficult. Slash depths of 1 to 2.3 feet reduced forage production and hindered access for many wildlife species (Bartels 1985).

While biologists recognize the importance of overstory disturbance in the boreal forest in terms of enhanced production of moose browse, recommendations for the size and shape of the forest openings vary greatly from 5 acres to a square mile or more. While birch is not the dominate species of the existing stand, this sale operation is intended to result in leaving mature birch standing as seed sources. Ground disturbance from logging activity will result in favorable conditions for subsequent birch regeneration.

Cover is more important in summer conditions than winter; moose have an efficient way of keeping warm in severe weather but are less efficient in moderating the effects of high summer temperatures that can cause them to overheat (INFEST #6). The buffers along the muskeg will provide some cover, but the harvested areas will not provide shading and calving areas.

## **Other Fur Bearers**

Timber harvest activities are expected to impact the habitat for ermines, mink, and river otters by reducing cover or abundance of available prey. By retaining timber in riparian areas—as will be required in this proposed sale—the above-mentioned impacts will be offset.

Lynx occur throughout the general area. Lynx will use early successional habitats resulting from timber cutting, but require proximity to mature mixed forests (DF&G 1994).

Similarly, the proposed prescription for harvest will reduce squirrel numbers, but populations will likely remain intact, though at lower densities than prior to timber harvest (DF&G 1994). Ground cover and security from raptors will likely increase with the reforestation practices that are being incorporated. By ensuring quick reforestation after harvest, quality habitat conditions for red squirrels should be achieved in a much shorter time than in the unmanaged beetle killed forest.

## **Birds**

Spruce grouse are also affected by the loss of spruce trees to the spruce beetle primarily through the loss of winter feeding habitat (DF&G 1994). Gradual loss of escape and thermal cover habitat will also occur as the spruce trees lose their needles and eventually fall over (DF&G 1994). The decreased winter food supplies (loss of spruce needles and buds) may displace grouse into areas of lower quality habitat that could increase nutritional stress, and lead to increased mortality (DF&G 1994). Predators associated with grouse, such as owls and goshawks, can be expected to show a response to the increased vulnerability of individual birds

displaced by the infestation (USFS 1994). In large-scale infestation areas increased amounts of deadfall, grass, and other debris will impede grouse reproductive displays and reduce summer feeding habitat (DF&G 1994). The end result of no treatment of these dying stands will be a decline in local spruce grouse populations (USFS 1994).

Harvest operations will have similar effects. The loss of canopy will result in increased mortality from predation because of more visible nests and loss of protection from inclement weather (DF&G 1994). Leave areas will help to offset this loss to the extent that they are useful. Scarification, where feasible and quick reforestation efforts will help to create more suitable habitat conditions in a shorter period of time than if left in an unmanaged condition.

The spruce bark beetle infestation has increased the number of snags and downed woody material, likely benefiting cavity-nesting birds such as woodpeckers, some owls, brown creepers, nuthatches, and chickadees (DF&G 1994). Most snags are beetle-killed spruce. However, mature hardwood stands that contain some hardwood snags offer the most cavities. This is due to the morphological differences between spruce and hardwoods. Living spruce seldom has soft heartwood preferred by cavity nesters. Spruce that die usually falls to the ground within 10 years, which is the time it takes for the heartwood to soften. The larger diameter birch, aspen, and cottonwood trees are more important than spruce for cavity nesters, however, there is very few birch within the timber block and no aspen or cottonwood trees. Spruce snags of 3-4 per acre will be retained for wildlife use. After the beetle outbreak subsides, woodpeckers will still benefit from the large numbers of secondary insects (*cerambycids*, ants, other *scolytids*) present, but this food abundance should only last 2 to 3 years (Schmid and Frye, 1977). The feeding value of these insects for woodpeckers will decrease because they are generally fewer in number and less accessible (they feed in deeper recesses in the wood). After these insects decline, the bird population is also expected to decline because of a lack of food. As the needles and bark fall off dead trees over time, these populations will also decline because of the reduction in available food and cover (DF&G, 1994).

The potential effects from a timber harvest on cavity-nesting and other non-game birds will be the shortage of suitable nesting trees, which could result in lower numbers of birds. The conversion of sites to early successional stages could result in a shift in bird species composition to favor birds that prefer grass, shrub/forb, and sapling habitats (DF&G 1994).

## **Fisheries**

This sale should have no effect on fisheries. An unnamed tributary is identified by the Department of Fish & Game as 244-10-100-10-2021 flows south of the proposed harvest unit; the nearest point of the harvest unit to this stream is approximately 220 feet. This stream meets the classification criteria of the Alaska Forest Resources and Practices Act. for Type II C. The proposed harvest unit lies farther than 100 feet from this stream, which will therefore provide required fish habitat protection. Buffers around the muskegs will prevent sedimentation into this particular stream.

## **C. Human Activity and Social Considerations**

### **Hunting**

Hunting pressure in the immediate area may increase as a result of easier access, and higher moose densities because of the added browse. The added hunting pressure is not expected to be significant relative to the

extent of hunting opportunity on the Peninsula. The Alaska Department of Fish and Game is responsible for setting hunting regulations, including restricting hunting areas.

### **Subsistence**

The subject area has not been designated as a subsistence zone. Under current state law, subsistence harvest opportunities within the sale area have been incorporated in general hunting and fishing regulations (DF&G 10/23/94). There are the following possible subsistence uses in the area: trapping, hunting and gathering of berries. The effects of the spruce beetle infestation and the proposed timber harvest on wildlife species of interest to both trapping and hunting are detailed above in the two wildlife sections. Most of the *Vaccinium* species prefer open forest conditions, which would tend to indicate that the berry crops might do well as the stands open up. However, Holsten, et al. (1995) indicated that on untreated beetle killed sites, lowbush cranberry decreased in number and on burned sites it doubled. It is anticipated that the berry crop will not be significantly affected by the proposed treatment.

### **Recreation**

There is probably some recreational use by local residents. The harvest is not anticipated to significantly disrupt historical uses. There are no established motorized or non-motorized trails within the sale area. The area may be used for moose hunting in the fall, but there was no evidence of any established camps or recreational use sites.

This area is not known to have unique tourism values. At this time, there are no commercial recreation operations that use this area.

### **Scenic resources**

Due to the relatively flat topography, the distance from the Sterling Highway, and the surrounding forest on private land, this sale will not likely be noticeable. This sale will be visible from aircraft, snowmobiles, and ATVs. Residents and visitors to Alaska consistently rated forest vistas damaged by spruce beetles lower in scenic beauty, and the more tree mortality present the lower the perceived scenic beauty. Both residents and visitors cite loss of scenic values as an important effect of beetle damage. Visitors consistently report sightseeing as a dominant activity, and indicate views seen as a major factor affecting the quality of their visit to Alaska. Respondents of a USFS study consistently preferred preventative thinning treatments to a no-treatment scenario. For forested areas already severely impacted by spruce beetle, respondents preferred the visual conditions produced by rehabilitation strategies that resulted in more rapid regeneration of forest cover. From a list of proposed actions including a no action alternative, respondents continued to prefer actions which would include cutting and removing dead trees, even if selling them would only recover part of the costs (Daniel et. al. 1991). Cutting and removing the dead trees was also chosen over the possibility of burning a site for forest regeneration. Similar results were obtained in other studies within the U.S. (Orland, 1997 and Orland et. al. 1993).

### **Cultural resources**

The Office of History and Archaeology and the State Historic Preservation Office (SHPO) reviews each Five-Year Schedule of Timber Sales and each Forest Land Use Plan for possible impacts to cultural resources. This Forest Land Use Plan will be distributed to the SHPO for review. To date, no cultural or historic sites within the sale area have been identified or brought to the attention to the Division of Forestry. Areas identified as historic, archaeological, or paleontological sites are protected as outlined in the Kenai Area Plan.

During the course of activities associated with this timber sale, cultural and/or paleontological resources may be inadvertently discovered. If such a site is discovered, the Division of Forestry will protect the site and contact the SHPO.

Under the Alaska Historic Preservation Act (41.35.200), all burials on state land are protected. If burials or human remains are found, all land-altering activities that would disturb the burial or remains shall cease and measures will be taken to protect it in place. The Office of History and Archaeology and a law enforcement officer will be notified immediately to ensure that proper procedures for dealing with human remains are followed.

#### **D. Silviculture and Timber Harvest**

The silvicultural prescription selected for spruce in this sale is salvage harvest, while keeping green reserves. All merchantable dead or infested spruce larger than 6 inches in DBH will be removed. Live spruce greater than 10 inches diameter at breast height will be allowed for harvest. After harvest, the resulting stand will consist of multi-age spruce, due to the age diversity of the seedlings and pole-sized trees left in the stand. Trees along the edges of muskegs, as well as pockets of sub merchantable within the harvest units will be retained for the purpose of wildlife cover.

Birch is present in this stands; however it averages less than 5% of the total stem density. Birch is a prolific seeder, but viability of seed is potentially low due to age and vigor of the birch. Birch trees are not expected to grow to maturity in large numbers in the sale area, due to moose browse. The birch is not expected to contribute significantly to regeneration of the harvest area. In order to promote vegetative reproduction of birch as well as seeding, trees greater than 10 inches in diameter at breast height will be allowed for harvest at the discretion of the state.

Logging will not be authorized during spring break-up, which usually occurs during a period from mid-April to June 1. The length of time to complete the harvest operations will be two years. The contract will require that care be taken to minimize damage to residuals.

Delimbed tops will be re-scattered and allowed to decompose or will be burned. Some piles will be retained for their wildlife values. Large amounts of nutrients such as phosphorous, nitrogen, and to a lesser extent for other mineral elements, are stored in the foliage, twigs, and branches; smaller amounts are in the main trunk of the tree (Bartels 1985). This material (limbs, twigs, and needles) is an important source of nutrients for the next stand of trees; typically over 95% of the nitrogen is contained within this material (Perry, et. al. 1989). Disposal of green or infested spruce material larger than five inches in diameter shall be in accordance with the standards set in 11 AAC 95.195(b) of the Forest Practices Regulations. Stump heights will be kept as low as feasible, typically less than one foot.

Logging may be allowed in the summer at the discretion of the state, if it does not cause erosion or degradation of water quality. Logging will not be authorized during spring break-up, which usually occurs during a period from mid-April to June 1. The length of time to complete the harvest operations will be two years. Directional falling may be required to protect 70 percent of the seedlings, saplings and pole-sized residuals. The contract will require that care be taken to minimize damage to residuals.

The State will conduct regeneration surveys within 2 years following harvest to determine if artificial regeneration will be necessary. Planting may be necessary on sites lacking sufficient regeneration to meet stocking standards. Planted spruce seedlings will be grown from locally collected seed. This proposal may be adjusted post-harvest depending on the success in protecting residual seedlings and saplings.

Regeneration surveys will monitor trends of survival and species composition and also help to determine if any further reforestation effort is required to meet the reforestation requirements of the Forest Resources and Practices Act (11 AAC 95.375).

### **Sustained yield and allowable cut**

The Alaska Forest Resources and Practices Act [AS 41.17.060 (c)] and Article VIII Sec. 4 of the State Constitution require that state forest land be managed on a sustained yield basis. Sustained yield is defined in the Alaska Forest Resources and Practices Act [AS 41.17.950(15)]:

"Sustained Yield" means the achievement and maintenance in perpetuity of a high level of annual or regular periodic output of the various renewable resources of forest land and water without significant impairment of the productivity of the land and water, but does not require that timber be harvested in a non-declining yield basis over a rotation period.

This sale complies with sustained yield/allowable cut principles outlined in the Kenai-Kodiak Area's Five Year Schedule of Timber Sales for 2009 - 2013.

### **F. Transportation**

The access route to this timber sale area is south of the North Fork Road approximately 5 miles east of Anchor Point, then south along Lichen Avenue for approximately one half mile. From the end of the existing gravel road, approximately 700 feet of winter road will need to be constructed along the Lichen Avenue right-of-way to reach the DNR property line, i.e. the proposed sale area.

The purchaser of this proposed sale will be required to implement traffic safety precautions deemed necessary by the Division of Forestry to ensure public safety.

The access road constructed for this proposed sale must be approved by the Division of Forestry and will be subject to all standards set out in the FRPA. Specific maintenance requirements for the road during timber harvest operations will be incorporated into the timber sale contract. After the harvest activities are complete, the secondary roads and skid trails will be closed according to Alaska Forest Resources and Practices standards (11 AAC 95.320):

- Roads and ditches will be left in a condition that will control erosion.
- In areas accessible to highway vehicles, the road is blocked so that a four-wheeled highway vehicle cannot easily pass the point of blockage.
- Bridges, culverts, and fills are removed from surface waters.

### **G. Erosion**

This proposed timber sale is on relatively flat terrain; the overall slope is less than ten percent grade. Moreover, there are no streams within the proposed site.

### **Mining**

There is no known mining activity in this area and therefore no effect.

### **Materials**

This proposed harvest will not preclude future development of a material site.

## **Economics**

The harvest of timber will have an effect on local employment by generating or maintaining an estimated 5 jobs directly associated with the harvest and reforestation activities. Firewood supplied from this sale is expected to be an economical alternative to heating oil particularly for residents in the Anchor Point / Homer area. Timber harvesting is expected to benefit the local economy by providing much-needed jobs and forest products for local forest products industries. This action is not expected to adversely impact any of the other industries on the Kenai Peninsula. As explained above, there are no expected impacts on fisheries. This area is not used for commercial recreation or tourism. There are no oil or gas operations near the sale area.

## **V. MARKET CONDITIONS**

The local market includes domestic sawlogs, house logs and firewood. Most of the timber from this sale area will probably be sold and utilized as firewood. The cost of heating oil on the Kenai Peninsula rose sharply in 2008 and has remained unstable. The demand for firewood has increased noticeably over the previous two years. Consequently, firewood sold for \$125 to \$150 per cord in 2009, and is expected to remain roughly the same in 2010. Over the last three years, there has been a greater demand from the public for firewood than for sawlogs or houselogs.

Currently, there are six timber sales under contract with the DOF. Logs from these sales are being sold to three individually owned small sawmills in the area. An increasing proportion of the timber from these sales is being sold for firewood. Based on current and expected conditions this sale is expected to be marketable.

The economic conditions in the general vicinity of this proposal are fair. The current local economy is based on oil and gas industry, tourism, commercial and sport fishing, logging, retail, and government employment. The Kenai Peninsula Borough historically has had a high seasonal unemployment rate. Timber harvest within the area, which can be harvested in the winter, may provide employment opportunities during what has traditionally been the off-season. The sale offered under this proposal will be appraised based sale prices of similar local timber sales.

## **VI. ALTERNATIVE ACTIONS**

There are four possible alternatives to consider for this sale. A discussion of each of the four alternatives follows:

1. Proceed with the sale(s) as proposed. This alternative meets the objectives of the Five-Year Schedule of Timber Sales and one of DNR's mandates to make the state's renewable resources available for public use. It also meets the silvicultural objective of improving forest vigor, provides for a value-added end product and creates additional local jobs due to the combination of road building, logging, and trucking.
2. Modify the sale(s) by making them smaller or larger. This sale is intended to be large enough to be economically viable for mechanical logging methods. Increasing the size of the harvest unit will eliminate the surrounding no-harvest buffers which are intended to provide visual cover for wildlife. Decreasing the size of the sale area will reduce the supply of firewood and leave more timber to further deteriorate on the site and exacerbate the wildfire fuel loading. This sale is appropriately balanced to maintain other resource values as well as provide economic benefits to the Kenai Peninsula.
3. Defer the sale of this timber to a later date. Deferring harvest to a later date would fail to meet many of the objectives of the sale program. One of the main objectives is to try and make state-owned timber consistently available to the timber industry.



4. Not offer this timber for sale. This alternative would result in not meeting any of the objectives outlined for this management action. Utilization of the forest resource would not be achieved. There would be no significant contribution to the state and local economies. This alternative would delay the management objectives planned for the area, would deny making a source of raw materials available to the local wood products industry, and would delay the harvest of dead trees, mature trees, disease infected trees, and trees at risk to insect infestation. Decay in infected and infested mature spruce and birch trees results in loss of economic value.

## VII. ACMP CONSISTENCY ANALYSIS

This area is within the Kenai Peninsula Borough District Coastal Program. There are no known geophysical hazards within the proposed sale area. Recreational and subsistence use of the sale area is minimal; no seafood processing is designated to occur in this area; there is no grazing or agriculture use of the area. Therefore, the sale does not conflict with the standards on geophysical hazards; fish and seafood processing; subsistence and recreation; and agricultural use.

This offering is consistent with the habitat standard because the Forest Resources and Practices Regulations (FRPA) preempt the habitat standards enacted under 11 AAC 112 and 11 AAC 114 and the proposed action has been designed to be consistent with the FRPA.

In addition, the sale does not cause an impediment to existing or future transportation or utility corridors, and is therefore consistent with that standard. The Kenai Peninsula Borough Coastal District policies regarding forest management are met by this sale proposal. Laws and regulations regarding timber harvesting and the quality of air, land and water will apply, ensuring consistency.

## VIII. PRELIMINARY FINDING AND DECISION

The purpose of this decision is to determine if the Department of Natural Resources, Division of Forestry, will make available timber located in Section 1, Township 5 South, Range 15 West, and Section 31 Township 4 South, Range 14 West, Seward Meridian. . After due consideration of all pertinent information and alternatives, the DNR has reached the following **Preliminary Decision: To offer the sale as proposed in Alternative 1**. In addition, the DNR finds that this preliminary decision satisfies the objectives as stated in this document and it is in the best interest of the state to proceed with this action.

If you have any questions, please contact Hans Rinke of the Kenai/Kodiak Area Office at (907) 260-4210 or e-mail [hans.rinke@alaska.gov](mailto:hans.rinke@alaska.gov)

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Hans Rinke  
Area Forester

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Date

## **Abbreviations**

ADFG: Alaska Department of Fish and Game

BMPs: Best Management Practices

DBH: diameter at breast height

DEC: Department of Environmental Conservation

DLP: Defense of Life and Property

DNR: Department of Natural Resources

DOF: Division of Forestry

FF: Final Finding (Forest Land Use Plan)

FLUP: Forest Land Use Plan

FRPA: Alaska Forest Resources and Practices Act

FYSTS: Five Year Schedule of Timber Sales

KAP: Kenai Area Plan

ORV: off-road vehicle

PD: Preliminary Decision (Forest Land Use Plan)

SHPO: State Historic Preservation Office

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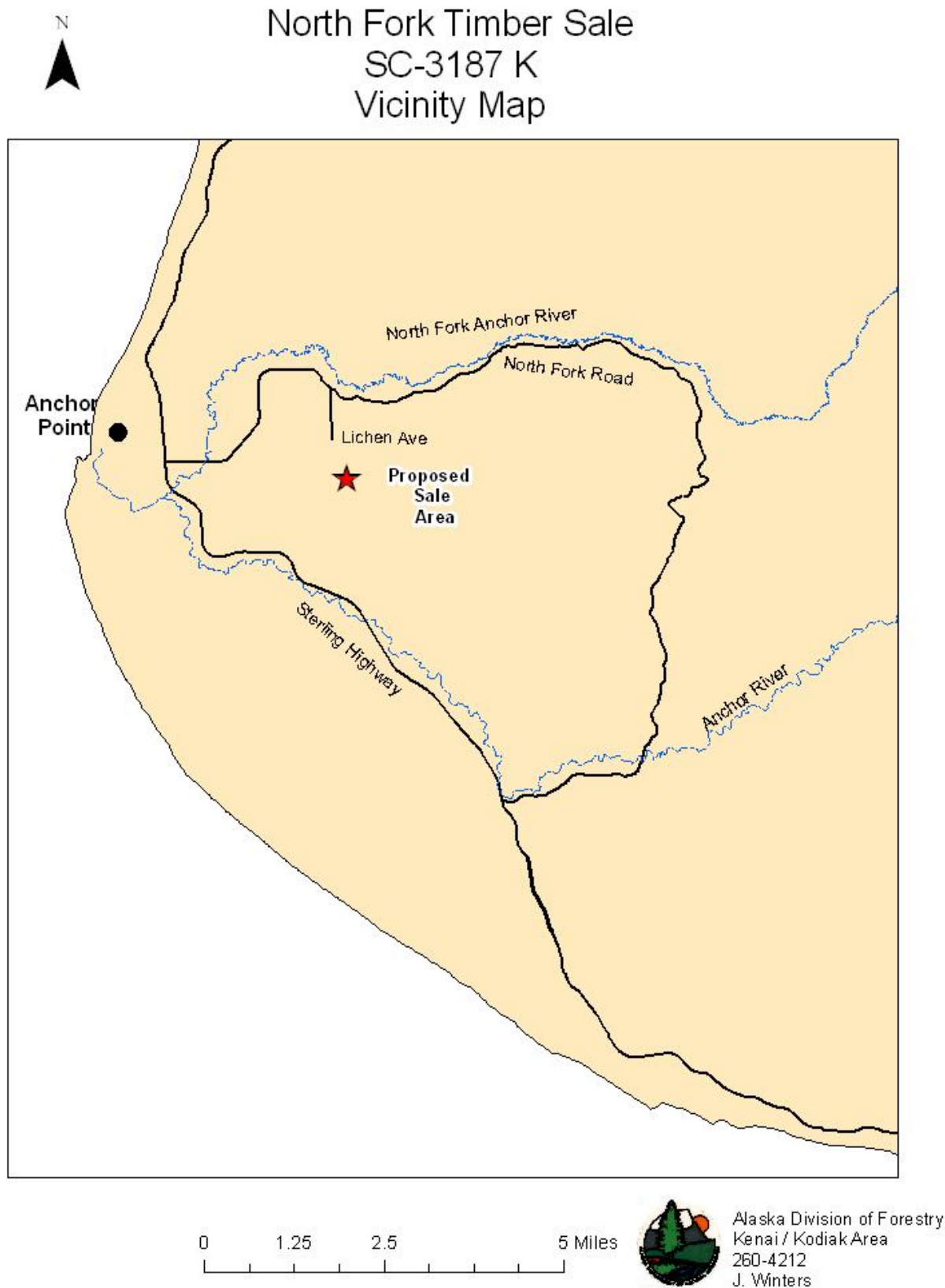
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**Links to Planning Documents:**

*Kenai Area Plan:* <http://www.dnr.state.ak.us/mlw/planning/areaplans/Kenai/index.cfm>

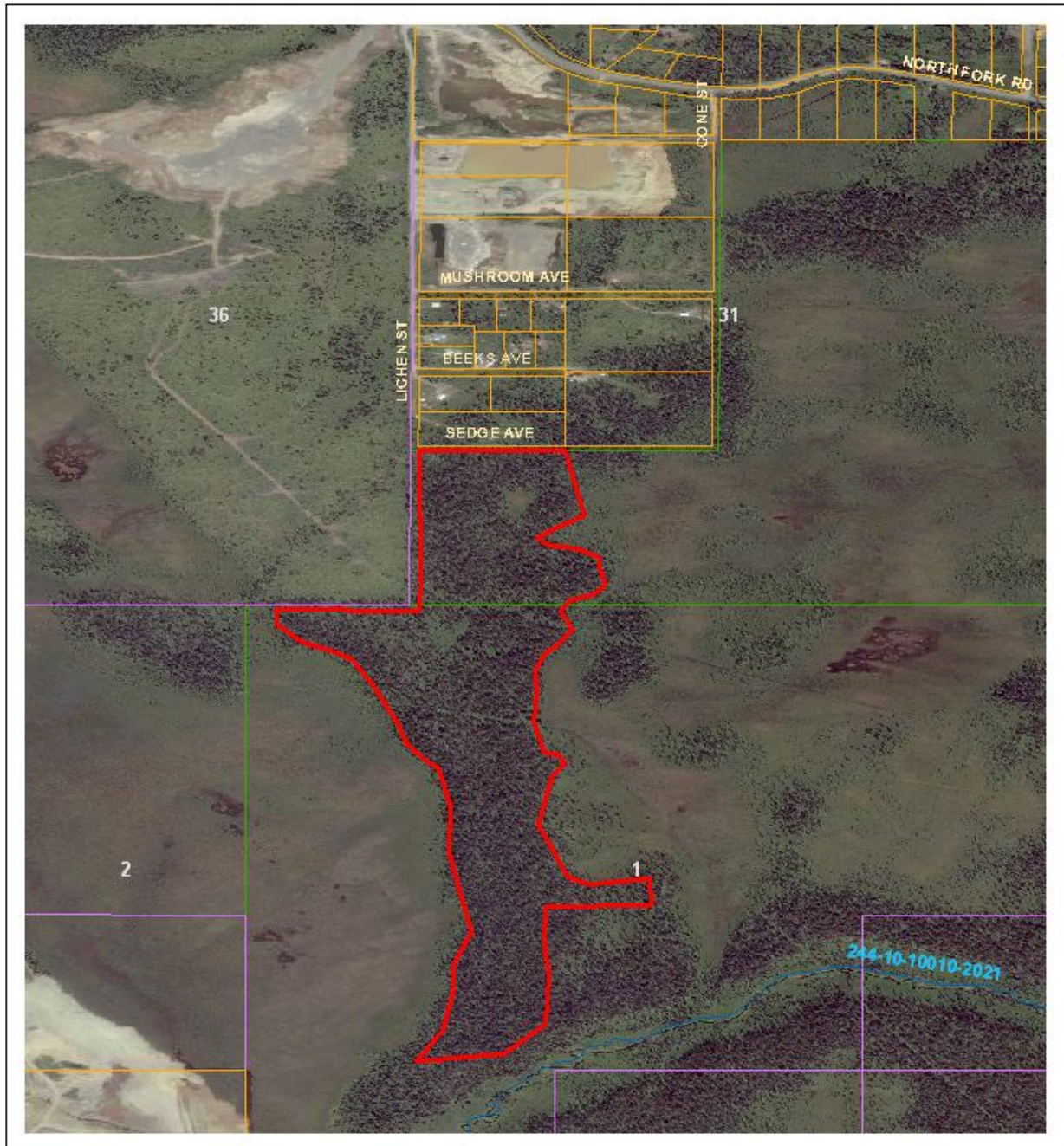
Timber sale Maps





# **North Fork Timber Sale SC-3187 K** **65 Acres**

Section 31, Township 4 S, Range 14 W  
 and Section 1, Township 5 S Range 15 W  
 Seward Meridian



- Timber Sale Area
- State DNR
- Private
- Cook Inlet Region, Inc.
- Anadromous Fish Stream

0 1,000 2,000 Feet

Alaska Division of Forestry  
 Kenai / Kodiak Area Office  
 John Winters  
 907-250-4212  
[john.winters@alaska.gov](mailto:john.winters@alaska.gov)  
 5/2010





